



STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES  
& ENVIRONMENTAL CONTROL  
DIVISION OF AIR & WASTE MANAGEMENT

156 S. STATE STREET  
DOVER, DELAWARE 19901

AIR QUALITY MANAGEMENT  
SECTION

TELEPHONE: (302) 739-4791  
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January 6, 2006

**Permit: APC-2003/0776-CONSTRUCTION (NSPS)**

Expansion Project: Landfill Gas Collection System at Cherry Island landfill  
Cherry Island Landfill, New Castle, Delaware

Delaware Solid Waste Authority  
1128 S. Bradford Street  
P.O. Box 455  
Dover, DE 19903

ATTENTION: Pasquale S. Canzano, P.E., DEE  
Chief Operating Officer

Dear Mr. Canzano:

Pursuant to the State of Delaware "Regulations Governing the Control of Air Pollution", Regulation No. 2, Section 2, approval by the Department of Natural Resources and Environmental Control (the Department) is hereby granted for the construction and installation of a horizontal landfill gas (LFG) collection system with surface collectors for the expansion project at the Delaware Solid Waste Authority's Cherry Island Landfill (the facility), New Castle County, Delaware, in accordance with the application submitted on Form No. AQM-4, dated June 15, 2004; letter dated February 4 signed and dated by Anne M. Germain, P.E., DEE, Manager of Engineering, DSWA; letters dated February 15, March 22 and July 28, 2005 both signed and dated by Carrie Pendleton, P.E., Engineer, GeoSyntec Consultants; email dated September 15, 2005 received from Angela DiFrancesco, DSWA; and Secretary's Order 2006-A-0002 dated January 6, 2006.

This permit is issued subject to the following conditions:

**1. General Provisions**

- 1.1 This permit expires on January 6, 2009. If the LFG collection system described above will not be constructed by January 6, 2009, an application for a new construction permit must be submitted by October 6, 2008.
- 1.2 The project shall be constructed in accordance with the application described above. If any changes are necessary, revised plans must be submitted and supplemental approval issued prior to actual construction.
- 1.3 Representatives of the Department may, at any reasonable time, inspect this facility.
- 1.4 This permit may not be transferred to another location or to another piece of equipment or process.
- 1.5 This permit may not be transferred to another person, owner, or operator unless the transfer has been approved in advance by the Department. A request for a permit transfer shall be received by

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the Department at least thirty (30) days before the date of the requested permit transfer. This request shall include:

- 1.5.1 Signed letters from each person stating the permit transfer is agreeable to each person; and
- 1.5.2 An applicant Background Information Questionnaire pursuant to 7 Del. C., Chapter 79 if the person receiving the permit has not been issued any permits by the Department in the previous five (5) years.
- 1.5.3 Approval (or disapproval) of the permit transfer will be provided by the Department in writing.
- 1.6 The applicant shall, upon completion of each section/phase of construction, installation, or alteration, request in writing that the Department grants approval to operate.
- 1.7 A separate application to operate pursuant to Regulation No. 2 does not need to be submitted to the Department for the equipment or process covered by this construction permit. Upon a satisfactory demonstration by an on-site inspection that the equipment or process complies with all of the terms and conditions of this permit, the Department shall issue written approval to operate as each section/phase is completed.
- 1.8 The owner or operator shall not initiate construction, install, or alter any equipment or facility or air contaminant control device which will emit or prevent the emission of an air contaminant prior to submitting an application to the Department pursuant to Regulation No. 2, and, when applicable Regulation No. 25, and receiving approval of such application from the Department; except as exempted in Regulation No. 2 Section 2.2 of the State of Delaware "Regulations Governing the Control of Air Pollution."

## 2. Emission Limitations

- 2.1 Air contaminant emission levels shall not exceed those specified in the State of Delaware "Regulations Governing the Control of Air Pollution."
- 2.2 No person shall cause or allow the emission of visible air contaminants and/or smoke from a stationary or mobile source, the shade or appearance of which is greater than twenty (20%) percent opacity for an aggregate of more than three (3) minutes in any one (1) hour or more than fifteen (15) minutes in any twenty-four (24) hour period.
- 2.3 Odors from this source shall not be detectable beyond the facility property line in sufficient quantities such as to cause a condition of air pollution.
- 2.4 The design and installation of the landfill gas collection and control system shall meet the emission guidelines established under 40 CFR Part 60.752 dated July 1, 2001- Standards for air emissions from municipal solid waste landfills.
  - 2.4.1 The landfill gas collection system shall be designed and installed to be capable of controlling and extracting gas from all portions of the landfill and to meet all applicable operational and performance standards, including:
    - 2.4.1.1 Compliance with the specifications for active collection systems identified in 40 CFR Part 60.759 dated July 1, 2001.



- 2.4.2 The collection system shall be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment and:

2.4.2.1 Collect gas at a sufficient extraction rate so as to maintain compliance with the methane emissions standard set for the Condition 3.4.

2.4.2.2 Minimize off-site migration of subsurface gas.

### 3. Operational Limitations

- 3.1 The owner or operator shall comply with the following operational limits:

3.1.1 The owner or operator of the facility shall comply with the provisions of 40 CFR Part 60.753 dated July 1, 2001- Operational standards for collection and control systems.

3.1.2 The LFG collection system shall be operated such that all collected gases are combusted to control odor. In the event the system can not flare or process the gas for offsite combustion, the system blowers shall be shut down and all valves in the collection and control system contributing to the venting of gas to the atmosphere shall be closed within one (1) hour.

3.1.3 Design and operate a collection and treatment system such that gas is collected from each area, cell/section, or group of cells in the MSW landfill in which solid waste has been in place for 5 years or more if active; or 2 years or more if closed or at final grade.

3.1.4 DSWA shall, as soon as practicable, take whatever measures are in its power to compel the owner and operator of the gas compressor system, and associated collection and transmission systems, including the gas lines, process skid, and compressors, to upgrade the system so it is capable of processing and transmitting processed landfill gas at a rate of 9,000 scfm. When the landfill gas flow rate exceeds a daily average of 8,000 scfm for two consecutive months, DSWA shall take whatever measures are in its power to compel the owner and operator of the system to upgrade the system so it is capable of processing and transmitting processed landfill gas at the rate of 12,000 scfm. In any event, all landfill gas collected at the landfill shall either be processed by the gas compressor system or burned at a flare or flares.

3.1.5 DSWA shall evaluate, replace and maintain the lateral system as needed to ensure the maximum expected gas flow rate can be transferred through the gas collection system when each section of geomembrane is installed.

3.1.6 All landfill gas flow shall be diverted to the flare system for combustion within one (1) hour of gas compressor plant shutdown during normal operating hours and within four (4) hours outside of normal operating hours. The landfill gas shall be combusted by the flares until the gas flow is restored to the gas compressor plant. Normal operating hours shall mean Monday through Saturday, 7:00 a.m. until 3:00 p.m., excluding holidays.

3.1.7 The provisions of this permit apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed five (5) days for the collection system and shall not exceed one (1) hour for the treatment or control devices.

3.2 Wellhead Pressure

3.2.1 The gas collection system shall be operated with negative pressure at each wellhead except under the following conditions:

3.2.1.1 A fire or increased well temperature.

3.2.1.2 A decommissioned well.

3.2.2 If a positive pressure exists, action shall be initiated by the owner or operator to correct the exceedance within five (5) calendar days, except for the reasons allowed under condition 3.2.1 above. If negative pressure can not be achieved without excess air infiltration within fifteen (15) calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within one hundred twenty (120) days of the initial measurement of positive pressure.

3.2.3 If corrective actions are taken as specified in condition 3.2.2 above, the monitored exceedance is not a violation of the operational requirements in this section.

3.3 Temperature and Wellhead Gas Standards

3.3.1 The owner or operator shall operate each interior wellhead in the collection system with a landfill gas temperature less than 55<sup>o</sup> C and with either nitrogen level less than 20% or an oxygen level less than 5%. In addition, the owner or operator shall install a sampling port and a thermometer or other temperature measuring device at each wellhead and monitor monthly. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fire or significantly inhibit anaerobic decomposition by killing methanogens.

3.3.2 Surface collectors are not subject to the requirements of condition 3.3.1 as they are not considered wellheads.

3.3.3 If a well exceeds one of the operating parameters in condition 3.3.1, action shall be initiated to correct the exceedances with five (5) calendar days. If correction of the exceedances cannot be achieved within fifteen (15) calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measures shall not cause exceedances of other operational or performance standards.

3.3.4 If corrective actions are taken as specified in condition 3.3.3 above, the monitored exceedance is not a violation of the operational requirements in this section.

3.4 Methane Standards

3.4.1 The owner or operator shall operate the collection system so that the methane concentration is less than 500 ppm above background at the surface of the landfill. Areas with steep slopes or other dangerous areas may be excluded from the surface testing. For any location where monitored methane concentration equals or exceeds 500 ppm above background three times within a quarterly period, a new well or other collection device shall be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device,



and a corresponding timeline for installation may be submitted to the Department for approval.

- 3.5 At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate the facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
- 3.6 The owner or operator shall install, repair and monitor the cover integrity of the exposed geomembrane as per manufacturer's recommendations and Permit No. SW-01/01 issued by the Solid and Hazardous Waste Branch of the Department or as the permit is modified.
- 3.7 The owner or operator shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.
- 3.8 All structural and mechanical components of the equipment or process covered by this permit shall be maintained in proper operating condition.

#### 4. Testing Requirements

- 4.1 The Department reserves the right to require that the owner or operator perform emission tests using methods approved in advance by the Department.
- 4.2 Nitrogen levels shall be determined using Method 3C, unless an alternative test method is established as allowed by 40 CFR Part 60.752(b) (2) (i) dated July 1, 2001.
- 4.3 Unless an alternative test method is established as allowed by 40 CFR Part 60.752(b) (2) (i) dated July 1, 2001, oxygen levels shall be determined using Method 3A, except that:
  - 4.3.1 The span shall be set so that the regulatory limit is between 20 and 50 percent of the span.
  - 4.3.2 A data recorder is not required.
  - 4.3.3 Only two calibration gases are required, a zero and span, and ambient air may be used as the span.
  - 4.3.4 A calibration error check is not required.
  - 4.3.5 The allowable sample bias, zero drift, and calibration drift are +/- 10 percent.
- 4.4 Methane concentrations as measured while performing surface emission monitoring shall be measured using an organic vapor analyzer, flame ionization detector, or other portable monitor.
  - 4.4.1 The portable analyzer shall meet the instrument specifications provided in 40 CFR Part 60, Appendix A, Section 3 of Method 21 dated July 1, 2001, except that "methane" shall replace all references to VOC.
  - 4.4.2 The calibration gas shall be methane, diluted to a nominal concentration of 500 parts per million in air.

- 4.4.3 The instrument evaluation procedures of 40 CFR Part 60, Appendix A, Section 4.4 of Method 21 dated July 1, 2001 shall be used to meet the performance evaluation requirements in 40 CFR Part 60, Appendix A, Section 3.1.3 of Method 21 dated July 1, 2001.
- 4.4.4 The calibration procedures provided in 40 CFR Part 60, Appendix A, Section 4.2 of Method 21 dated July 1, 2001 shall be followed immediately before commencing a surface emission monitoring survey.
- 4.5 Background methane concentration shall be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells.
- 4.6 Surface emission monitoring shall be performed in accordance with 40 CFR Part 60, Appendix A, Section 4.3.1 of Method 21 dated July 1, 2001, except that the probe inlet shall be placed within 5 to 10 centimeters of the ground. Monitoring shall be performed during typical meteorological conditions.

## 5. Monitoring and Record Keeping Requirements

- 5.1 The owner or operator shall maintain all records including all monitored parameters, exceedances, and corrective actions for a period of not less than five (5) years. Records shall be available to the Department upon verbal or written requests.
- 5.2 A surface emission monitoring design plan shall be developed and submitted to the Department that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30 meter intervals. The surface emission monitoring plan shall include all penetrations from the landfill.
- 5.3 The owner or operator shall conduct monthly methane surface emission monitoring around the perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The surface emission monitoring shall include all objects penetrating the landfill surface. The monthly surface emission monitoring will continue until such time when a reduced monitoring schedule is accepted by the Department based on the evaluation of the existing surface emission monitoring results for the previous months. The evaluation shall be based on, but not limited to, the following criteria: number of excessive surface exceedances as defined by the NSPS limit of 500 ppm methane found during the monthly surface emission monitoring, the percentage of surface exceedances compared to the total points sampled per month with a maximum of 3% found exceeding the 500 ppm limit being used as a guide/goal, and the number of citizen complaints received. If this evaluation concludes the gas collection system is operating in a manner to minimize or eliminate odor complaints, the surface emission monitoring shall be reduced from monthly to quarterly. Should the evaluation conclude that the measured monthly surface emission monitoring frequency is still appropriate (based on the criteria above), the monthly surface emission monitoring shall continue for another six (6) months at which time another evaluation shall be made. The request to reduce surface emission monitoring frequency shall be made by DSWA. The monthly surface emission monitoring frequency evaluation shall be made jointly between DSWA and the Department. However, the final decision to continue/discontinue monthly surface emission monitoring shall be made by the Department.
- 5.4 The owner or operator shall conduct daily odor surveys at the perimeter of the facility. The daily surveys shall be conducted 6 days a week (Monday-Saturday). The owner or operator shall resume Sunday monitoring if there are any verified odor complaints on any Sunday in any

subsequent quarter. DSWA can subsequently request a resumption of the 6 days a week survey schedule if there is a 90 day period without a verified odor complaint on a Sunday. The survey shall be conducted by personnel who have not become desensitized to landfill odor. Additional daily odor surveys shall be conducted in response to citizens' complaints and when requested by the Department. Odors detected beyond the facility boundary shall be reported to the Department immediately. The results of all surveys shall be recorded and submitted to the Department monthly and shall include the wind direction at the time of the monitoring and the location where the odor was detected.

5.5 The following information shall be recorded, initialed and maintained in a log:

5.5.1 Instances when positive pressure occurs in efforts to avoid a fire.

5.5.2 The gauge pressure in the gas collection header on a monthly basis as provided in 40 CFR Part 60.755(a)(3) dated July 1, 2001.

5.5.3 Nitrogen or oxygen concentration in the landfill gas on a monthly basis as provided in 40 CFR Part 60.755(a)(5) dated July 1, 2001.

5.5.4 The temperature of the landfill gas on a monthly basis as provided in 40 CFR Part 60.755(a)(5) dated July 1, 2001.

5.5.5 The surface concentrations of methane on a monthly basis, except as provided in condition 5.3, according to the instrument specifications and procedures provided in 40 CFR Part 60.755(d) dated July 1, 2001.

5.6 If monitoring demonstrates that the operational requirements in Conditions 3.2, 3.3 and 3.4 are not met, corrective action shall be taken as specified in 40 CFR Part 60.755(a)(3) through (5) dated July 1, 1997 or 40 CFR Part 60.755(c) dated July 1, 2001.

5.7 The owner or operator shall maintain an up-to-date, readily accessible plot map showing each existing and planned well, horizontal collector, surface collector and other gas extraction device in the system and providing an unique identification location label for each collector.

5.8 The owner or operator shall keep up-to-date, readily accessible records of the installation date and location of all newly installed well, horizontal collector, surface collector and other gas extraction device as specified under 40 CFR Part 60.755(b) dated July 1, 2001.

5.9 The owner or operator shall keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in 40 CFR Part 60.759(a) (3) (i) dated July 1, 2001, as well as any nonproductive areas excluded from collection as provided in 40 CFR Part 60.759(a) (3) (ii) dated July 1, 2001.

6. Reporting Requirements

6.1 Emissions in excess of any permit condition or emissions which create a condition of air pollution shall be reported to the Department immediately upon discovery by calling the Environmental Emergency Notification and Complaint number, (800) 662-8802.

6.2 In addition to complying with Condition 6.1 of this permit, any reporting required by the "Reporting of a Discharge of a Pollutant or an Air Contaminant" Regulation, and any other reporting requirements mandated by the State of Delaware, the owner or operator shall, for each

occurrence of excess emissions, within thirty (30) calendar days of becoming aware of such occurrence, supply the Department in writing with the following information:

- 6.2.1 The name and location of the facility;
  - 6.2.2 The subject source(s) that caused the excess emissions;
  - 6.2.3 The time and date of the first observation of the excess emissions;
  - 6.2.4 The cause and expected duration of the excess emissions;
  - 6.2.5 For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and
  - 6.2.6 The proposed corrective actions and schedule to correct the conditions causing the excess emissions.
- 6.3 The owner or operator shall submit to the Department an amended design capacity report, as provided for 40 CFR Part 60.757(a)(3) dated July 1, 2001, when there is any increase in the design capacity of a landfill subject to the provisions of this subpart, whether the increase results from an increase in the area or depth of the landfill, a change in the operating procedures of the landfill, or any other means.
- 6.4 In addition to the reporting requirements of the Title V Permit: AQM-003/00111, the owner or operator shall submit to the Department annual reports of all operational exceedances. The annual reports shall contain the following information:
- 6.4.1 Date, value and length of time for all exceedances of parameters monitored.
  - 6.4.2 The location of each exceedance of the methane concentration as per condition 5.3 and the concentration recorded at each location for which an exceedance was recorded in the previous month.
  - 6.4.3 The date of installation and the location of each well or collection system expansion.
- 6.5 The monthly surface emission monitoring results shall be submitted to the Department within 14 days of the completion of each surface emission monitoring event.
- 6.6 The owner or operator shall submit the daily odor survey report to the Department as provided in condition 5.4 of this permit.
- 6.7 The owner or operator shall keep for at least five years, readily accessible, on-site records of the maximum design capacity, the current amount of solid waste in-place, and the year-by-year waste acceptance rate.
- 6.8 One (1) original and one (1) copy of all required reports shall be sent to the address below:

Air Quality Management Section  
Division of Air and Waste Management  
156 South State Street  
Dover, DE 19901

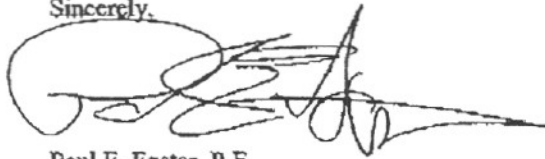


7. Administrative Conditions

7.1 This permit shall be made available on the premises.

7.2 Failure to comply with the provisions of this permit may be grounds for suspension or revocation.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul E. Foster', with a large, stylized flourish extending to the right.

Paul E. Foster, P.E.

Program Manager

Engineering & Compliance Branch

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pc:

Dover File

Nancy E. Terranova (New Castle)